Biological Control Work Plan Calendar Year 2012

Cooperator:	Kansas Department of Agriculture, Plant Protection and Weed Control	
State:	Kansas	
Project Title:	Purple Loosestrife (*Lythrum salicaria*) Biological Control using *Galerucella pusilla.*	
Project Coordinator:	Laurinda Ramonda	
Agreement Number	12-8420-1227-CA	
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I. BACKGROUND INFORMATION

A. Provide a brief description of the issue

Purple Loosestrife is an invasive, nonnative, Watch List weed species in the state of Kansas that has been documented in 13 counties and observed in many more. Purple Loosestrife's invasiveness comes from its ability to out-compete native wetland vegetation and its capacity to reproduce and spread rapidly via rhizomes and waterborne seed. With this explosive growth rate, it is capable of forming monoculture plant habitats in wetland areas. It also infests lowland pasture and wildlife areas that are difficult to chemically or mechanically control. For example, Troy City Lake in northeast Kansas and Mound City Lake in southeast Kansas both battle Purple Loosestrife on a yearly basis. The difficulty of control comes from the areas proximity to urban locations, low fluctuating water levels, and tree or shrub cover. To maintain wildlife habit and recreational usability of these water bodies, it has become important to pursue various control approaches, including biological control.

B. Indicate

Is this a new project? ☒ YES ☐ NO

Is this a continuation of a previously funded agreement? ☐ YES ☒ NO. If yes, have all progress reports been submitted? Explain.

This will be the first year in a three year plan to release the Loosestrife Defoliating Beetle (*Galerucella pusilla*) on Purple Loosestrife (*Lythrum salicaria*). Each year the current population of the beetles will be monitored and additional releases of the species will

occur. Viability of combining the Loosestrife Defoliating Beetle with additional biological control insects such as the Loosestrife Root Weevil (*Hylobus transversovittatus*) and/or the Loosestrife seed weevil (*Nanophyes marmoratus*) will be assessed for a more complete Integrated Weed Management strategy.

II. OBJECTIVES, NEED FOR ASSISTANCE, BENEFITS EXPECTED

A. Specific Objectives of the Project (List if more than one)

- Perform an initial release of *Galerucella pusilla* for biological control on Purple Loosestrife at Troy City Lake in Doniphan County and Mound City Lake in Linn County.
- Monitor *Galerucella pusilla* populations and Purple Loosestrife population after release.
- Establish an insectary for future *Galerucella pusilla* releases in Kansas.
- Assess viability of including introductions of the Loosestrife Root Weevil (*Hylobus transversovittatus*) and/or the Loosestrife seed weevil (*Nanophyes marmoratus*).

B. Justify how the funding will facilitate the cooperator in carrying a Biological Control Project that targets a pest of concern to APHIS

Purple Loosestrife is a Kansas quarantined weed and a Watch List weed species in the state. It infests areas of wetland habitat in 13 counties and observed in many more. Our goal is to establish a collectable population so that *Galerucella pusilla* can be spread to other parts of Troy City Lake in Doniphan County, Mound City Lake in Linn County and other parts of Kansas.

C. Indicate the economical or environmental impact of the pest (i.e., economic losses caused by the pest, mitigation costs, cost of the invasive species)

In 2007, the National Resources Inventory estimated that there was approximately 753,500 acres of palustrine wetlands in Kansas. These wetlands include sandhill pools along the Arkansas River, playa lakes in western Kansas, freshwater marshes such as those in Cheyenne Bottoms, and salt marshes such as those in Quivira National Wildlife Refuge. Kansas wetlands are important to over 200 species of migrating waterfowl and shorebirds which depend on the remaining wetlands in the state as an important stopover along the Central Flyway. These wetlands also provide habitat and cover for a myriad of other wildlife, including 37 mammal species, 13 amphibian species, 124 aquatic invertebrate species, and over 340 species of plants. Purple loosestrife remains a significant environmental threat to Kansas wetlands by out-competing native wetland vegetation and creating a monoculture that does not favor wildlife. In addition, purple loosestrife makes recreational use around lakes and ponds extremely difficult. Anglers and hunters are limited on where they can fish and hunt due to the heavy infestations.

D. Describe the expected benefits of conducting the activities in the work plan

Establishing a biological control organism will provide a longer term solution for the

control of Purple Loosestrife. In addition, a biological control organism for Purple Loosestrife will aid in the implementation of an integrated weed management plan. Combining the efforts of chemical, mechanical and biological control will result in better weed management than chemical treatment alone.

III. RESULTS

A. What are the anticipated results and successes?

- Reduce the spread of Purple Loosestrife.
- Reduce the competitiveness of Purple Loosestrife so that native vegetation will have the chance to flourish.
- Establish an insectary for future releases in Kansas.

B. Describe how results will:

1. Reduce mitigation costs of managing the pest

Reduce the cost of chemical control, which can range from $18 to $42 per acre. Also preventing the spread of Purple Loosestrife will reduce future economic impact.

2. Minimize negative impacts on non-targets

Galerucella pusilla is approved by APHIS and has minimal non-target effect.

3. Establish biocontrol agents

Release and monitoring over a few years will hopefully provide an established population. In addition, information provided by the release of Loosestrife Defoliating Beetle (*Galerucella pusilla*) will help determine the viability of including introductions of the Loosestrife Root Weevil (*Hylobus transversovittatus*) and/or the Loosestrife seed weevil (*Nanophyes marmoratus*).

4. Reduce pest densities

Galerucella pusilla larva will feed on the foliage of Purple Loosestrife in the late spring. Reduction of foliage by adults and larva will reduce the growth capacity of Purple Loosestrife causing stem reductions, limiting flower production, and consequently seed production.

C. Select which of the following OUTPUTS will be achieved by the termination date: (Select YES, NO, or N/A for each output) * *N/A is non-applicable.*

• New rearing techniques	☐ YES	☐ NO	☒ N/A*
• Effective or improved rearing techniques	☐ YES	☐ NO	☒ N/A
• New potential BC species identified, studied, or collected	☐ YES	☐ NO	☒ N/A
• Effective or improve field site evaluation techniques	☒ YES	☐ NO	☐ N/A
• Effective or improve surveying techniques for pest or agent	☒ YES	☐ NO	☐ N/A
• Effective or improve monitoring techniques for pest or agent	☒ YES	☐ NO	☐ N/A
• Publications or educational material	☒ YES	☐ NO	☐ N/A

• Training	☐ YES	☒ NO	☐ N/A
• Other	☐ YES	☒ NO	☐ N/A

Explain here for Other:

For OUTPUTS selected as YES, provide a description:

- Either success or failure of the biological control release will help improve field site selection criteria.
- Survey of the Purple Loosestrife infested areas before and after biological control release.
- After the biological control release, monitor the sites for *Galerucella pusilla* plant injury symptoms and adults.
- Monitor the Purple Loosestrife density in the release areas.
- Information on the release of *Galerucella pusilla* will be published on the KDA website and shared with the county weed directors of Kansas.

IV. APPROACH

A. Plan of Action for the proposed objectives - Describe the work to be performed under this work plan. The narrative is to include any information or data that will be shared with APHIS.

The Loosestrife Defoliating Beetle (*Galerucella pusilla*) will be sourced through USDA and released in May at the sites selected near Troy City Lake in Doniphan County and Mound City Lake in Linn County, Kansas. This year will be the first release in a planned three year release project in establishing *Galerucella pusilla* in Kansas. The newly released adults will lay eggs on the emerging Purple Loosestrife plants and in the surrounding soil. The larva will emerge during the summer, synchronized with the elongation of Purple Loosestrife stems. Larvae will hatch from eggs after about one week and move to leaf buds where they remain well-concealed as they feed. As they get older and larger, larvae, as well as the released adults, will openly feed on leaves and stems. After completing three instars, mature larvae move into the litter beneath purple loosestrife plants to pupate. New adults emerge between mid-June and mid-July, feed for a limited time to accumulate body fat, and then seek overwintering sites in the leaf litter. During mid-summer, Purple Loosestrife densities will be measured with a quadrat and there will be a survey to monitor the survival of *Galerucella pusilla* adults using a sweep net. The summer density measurement should reveal the characteristic "shothole" damage of adult beetles feeding on Purple Loosestrife leaves and young shoot tips. Data will be taken with a PDA/GPS and analyzed in ArcGIS. All survey data from cooperative agreements involving pest surveys will be entered by the State Survey Coordinator or KDA staff into the IPHIS, if available, if not then NAPIS database using approved protocol.

B. Indicate which of the following activities will be performed: (Select YES, NO, or N/A for each output) * *N/A is non-applicable.*

• Survey of pests	☒ YES	☐ NO	☐ N/A*
• Survey of BC agents	☒ YES	☐ NO	☐ N/A

• Environmental release of BC agents	☒ YES	☐ NO	☐ N/A
• BC agent collection – offshore	☐ YES	☐ NO	☒ N/A
• BC agent collection – field	☐ YES	☐ NO	☒ N/A
• BC agent distribution from lab or insectaries	☐ YES	☐ NO	☒ N/A
• Monitoring of pest	☒ YES	☐ NO	☐ N/A
• Monitoring of BC agents	☒ YES	☐ NO	☐ N/A
• Pre-release evaluation, development, or screenings of agent	☐ YES	☒ NO	☐ N/A
• Pre-release site selection and evaluation	☒ YES	☐ NO	☐ N/A
• Post-release site evaluation	☒ YES	☐ NO	☐ N/A
• Post-release evaluation of impacts on non-targets	☐ YES	☒ NO	☐ N/A
• Post-release evaluation of agent's efficacy	☒ YES	☐ NO	☐ N/A
• Rearing of BC agents	☐ YES	☐ NO	☒ N/A
• Mapping of pest or BC agent	☒ YES	☐ NO	☐ N/A
• Outreach or education	☒ YES	☐ NO	☐ N/A
• Training	☐ YES	☒ NO	☐ N/A
• Partnering or Networking	☒ YES	☐ NO	☐ N/A
• Techniques or methods development	☐ YES	☒ NO	☐ N/A
• Technology transfer	☐ YES	☒ NO	☐ N/A
• Other	☐ YES	☒ NO	☐ N/A

Explain here for Other:

For Activities selected as YES, provide a description:

- Prior to and after biological control agent release, Purple Loosestrife will be surveyed at release sites using a quadrat to sample stem density.
- Release of *Galerucella pusilla*, at Troy City Lake in Doniphan County and Mound City Lake in Linn County, Kansas
- After biological control agent release, Purple Loosestrife will be monitored.
- After releases, monitor the survival of *Galerucella pusilla* adults using a sweep net.
- Prior to release, sites will be evaluated and selected based on Purple Loosestrife density, acreage, and ease of access.
- After release, monitor Purple Loosestrife using a quadrat to sample stem density.
- Populations of Purple Loosestrife and *Galerucella pusilla* will be mapped and analyzed using ArcGIS.
- After release, assessment of viability of releasing Loosestrife Root Weevil (*Hylobus transversovittatus*) and/or the Loosestrife seed weevil (*Nanophyes marmoratus*) for a more complete integrated weed management strategy.
- Publish information on the release of *Galerucella pusilla* on the KDA website and shared with the county weed directors of Kansas.
- The Kansas Department of Agriculture will partner with the Doniphan County Weed Department and the Linn County Weed Department. The two Weed Departments will aid in the coordination and approval of the release sites in their respective counties.

C. Contingencies - Include other approaches that will be considered if the work plan produces results sooner, later, or different than what you anticipate.

- Failure to establish a *Galerucella pusilla* population will result in additional attempts to establish this biological control organism.

- Establishment will result in a collectable population, allowing movement of *Galerucella pusilla* to other parts of the lakes and other counties in Kansas.
- Establishment may result in supplemental releases of Loosestrife Root Weevil (*Hylobus transversovittatus*) and/or the Loosestrife seed weevil (*Nanophyes marmoratus*) for a more complete integrated weed management strategy.

D. What is the quantitative projection of accomplishments to be achieved?

- Release of *Galerucella pusilla*, at the Troy City Lake in Doniphan County and Mound City Lake in Linn County, Kansas in May.
- Map and analyze data using ArcGIS.
- All survey data from cooperative agreements involving pest surveys will be entered by the State Survey Coordinator or KDA staff into the IPHIS, if available, if not then NAPIS database using approved protocol.
- Publish information on KDA webpage and share information with Kansas County Weed Directors.

1. By activity or function, what are the anticipated accomplishments by month, quarter, or other specified intervals?

Month	Activity
May - June	• Release of Loosestrife Defoliating Beetle (*Galerucella pusilla*) on Purple Loosestrife. • Density measurement of Purple Loosestrife.
July - August	• Monitor Purple Loosestrife damage. • Monitor Loosestrife Defoliating Beetle (*Galerucella pusilla*).

2. What criteria will be used to evaluate the project?

- All survey data from cooperative agreements involving pest surveys will be entered by the State Survey Coordinator or KDA staff into the IPHIS, if available, if not then NAPIS database using approved protocol.
- Maps of the biological control project activities are produced to aid in decision making, control measures, and management of this pest.
- State CAPS and KDA meetings to keep updated on issues.

3. What methodology will be used to determine if identified needs are met?

- Review of the accomplishment reports and maps.
- State CAPS and KDA meetings to keep updated on issues.
- Periodic surveying of pest and biological control agent using quadrats to sample Purple Loosestrife stem densities and sweep nets to monitor of Loosestrife Defoliating Beetle (*Galerucella pusilla*).

4. What methodology will be used to determine if Results and benefits are achieved?

- Final map and data collection originally set forth in workplan.
- Infestation maps are completed and final report is sent to USDA.

VI. RESOURCES

A. What resources are required to perform the work?

- KDA staff will perform pre-site selection, release and monitoring activities.
- GPS unit to map, survey, and monitor release sites.
- Loosestrife Defoliating Beetle (*Galerucella pusilla)* will be provide by USDA.
- Rental or state vehicles are required travel to and from the release sites.
- ATV to aid in the surveying, release and monitoring of the sites.
- Provided by Cooperator, office space with associated services and utilities, computers and other office equipment for the use of Cooperator personnel. These include digital camera, PDA with GPS unit, and computer with GIS and internet service. All survey data from cooperative agreements involving pest surveys will be entered by the State Survey Coordinator or KDA staff into the IPHIS, if available, if not then NAPIS database using approved protocol.

1. What numbers and types of personnel will be needed, and what will they be doing?

- KDA staff will perform pre-site selection, release and monitoring activities.

2. What equipment will be needed to perform the work? Include major items of equipment with a value of $5,000 or more.

- ATV

a. What equipment will be provided by the cooperator?

- ATV

b. What equipment will be provided by APHIS?

- N/A

c. What equipment will be purchased in whole or in part with APHIS funds?

- N/A

d. How will the equipment be used?

- ATV will aid in surveying, release and monitoring of the sites.

e. What is the proposed method of disposition of the equipment upon termination of the agreement/project?

- N/A

3. Identify information technology equipment, e.g., computers, and their ancillary components. ***All information technology supplies (e.g., small items of equipment, connectivity through air cards or high speed internet access, GPS units, radios for emergency operations etc.) should be specifically identified.***

- Computers with internet access and GIS software.
- PDA with GPS.
- Digital camera.

4. What supplies will be needed to perform the work? Identify individual supplies with a cumulative value of $5,000 or more as a separate item.

- N/A

a. What supplies will be provided by the Cooperator?

- N/A

b. What supplies will be provided by APHIS?

- N/A

c. What supplies will be purchased in whole or in part with APHIS funds?

- N/A

d. How will the supplies be used?

- N/A

e. What is the proposed method of disposition of the supplies with a cumulative value over $5,000 upon termination of the agreement/project?

- N/A

5. What procurements will be made in support of the funded project and what is the method of procurement (e.g., lease, purchase)?
(Cooperator procurements shall be in accordance with OMB Circulars A-102 or A110, as applicable.)

- Loosestrife Defoliating Beetle (*Galerucella pusilla*) will be provided by USDA.
- The Fiscal Department at the Kansas Department of Agriculture will handle most contracts.
- Most procurements will be made by purchase.

6. What are the travel needs for the project?

- Travel will be required to survey sites by use of a KDA or rental vehicle.
- KDA Plant Protection and Weed Control Plant Program Manager is the approving official.
- Costs are included in the financial plan.

a. Is there any local travel to daily work sites? Who is the approving official? What are the methods of payment? Indicate rates and total costs in the Financial Plan.

- Travel will be required to biological control sites by use of a KDA or rental vehicle.
- The KDA Plant Protection and Weed Control Plant Program Manager is the approving official. Costs are included in the financial plan.
- The Fiscal Department at the Kansas Department of Agriculture will handle most contracts.
- Most procurements will be made by purchase.

b. What extended or overnight travel will be performed (number of trips, their purpose, and approximate dates). Who is the approving official? What is the method of payment? Indicate rates and total cost in the Financial Plan.

- No overnight travel is expected.
- The KDA Plant Protection and Weed Control Plant Program Manager is the approving official. Costs are included in the financial plan.
- The Fiscal Department at the Kansas Department of Agriculture will handle payment.

7. Are there any other contributing parties who will be working on the project?

☒ YES ☐ NO

If YES, answer below:

a. List Participating Agency/Institution:

- KDA Plant Protection and Weed Control
- Doniphan County Weed Department
- Linn County Weed Department

b. List all who will work on the project:

- KDA Plant Protection and Weed Control
- Doniphan County Weed Department
- Linn County Weed Department

c. Describe the nature of their effort:

- KDA will perform the selection, biological control agent release and Purple Loosestrife and Loosestrife Defoliating Beetle (*Galerucella pusilla*) surveying and monitoring in Doniphan and Linn counties.
- Doniphan County and Linn County Weed Departments will coordinate and approve release sites.

d. Contribution:

- KDA will perform the selection, biological control agent release and

Purple Loosestrife and Loosestrife Defoliating Beetle *Galerucella pusilla*) surveying and monitoring at the two sites.
- Doniphan County and Linn County Weed Departments will coordinate and approve release sites.

VII. GEOGRAPHIC LOCATION OF PROJECT

A. Is the project statewide or in specific counties, townships, and/or national or state parks? (List all that apply)

This will be the first year of a three year plan, to release biological control agent Loosestrife Defoliating Beetle (*Galerucella pusilla*) on Purple Loosestrife. The release sites will be located at Troy City Lake in Doniphan County and Mound City Lake in Linn County, Kansas. The GPS coordinates of the planned 2012 releases are 39.786456 Latitude, -95.099598 Longitude for the Troy City Lake location and 38.112428 Latitude, -94.892618 Longitude for the Mound City Lake location.

B. What type of terrain (e.g., cropland, rangeland, woodland) will be involved in the project?

The Troy City Lake location contains cropland, rangeland, woodland, and urban park land. The Mound City Lake location contains cropland, rangeland, and woodland.

C. Are there any unusual features which may have an impact on the project or activity such as rivers, lakes, wild life sanctuaries, commercial beekeepers etc? (list all that apply)

Both lake areas, Troy City Lake and Mound City Lake, include city park areas managed by the City of Troy and City of Mound City, respectively.

D. Are there tribal lands in proximity to the project area that may be impacted, positively or negatively, by the project?

None.

VIII. DATA COLLECTION AND MAINTENANCE

A. What type of data will be collected and how will it be maintained?

- Data collection will be both electronic and visual.

B. Address timelines for collection, recording, and reporting of data.

- Survey data will be collected with GPS technology for internal pathway analyses.
- Survey maps will be developed from approved GIS mapping software.
- All survey data from cooperative agreements involving pest surveys will be entered by the State Survey Coordinator or KDA staff into the IPHIS, if available, if not then NAPIS database using approved protocol.

C. How will APHIS be provided access to the data?

- All survey data from cooperative agreements involving pest surveys will be entered by the State Survey Coordinator or KDA staff into the IPHIS, if available, if not then NAPIS database using approved protocol.
- Data is available through KDA.

D. Identify if the data collected relate to the following measures.
* ***N/A is non-applicable.***

• The number of BC species that become established and sustainable	☒ YES	☐ NO	☐ N/A*
• The number of BC programs that are developed, implemented, or transferred to States or others	☒ YES	☐ NO	☐ N/A
• Total number of sites that are managing targeted pests using biocontrol	☒ YES	☐ NO	☐ N/A
• Total number of new agents identified, studied, or imported	☐ YES	☐ NO	☒ N/A
• Total number of pre-release and site evaluations, or surveyed	☒ YES	☐ NO	☐ N/A
• Total number of sites monitored	☒ YES	☐ NO	☐ N/A
• Successful development of rearing and release technology	☐ YES	☐ NO	☒ N/A
• Number of eligible sites with targeted pests participating in biocontrol	☒ YES	☐ NO	☐ N/A
• Number of targeted pests managed using biocontrol	☒ YES	☐ NO	☐ N/A
• Number of publications, presentations, databases, and educational material	☐ YES	☐ NO	☒ N/A
• Number of agent colonies or insectaries created	☒ YES	☐ NO	☐ N/A
• Time of monitoring released BC agents in the field	☒ YES	☐ NO	☐ N/A
• Cost operating rearing laboratories	☐ YES	☐ NO	☒ N/A
• Total number of BC individuals reared	☐ YES	☐ NO	☒ N/A
• Total number of BC individuals released	☒ YES	☐ NO	☐ N/A
• Cost of BC individual reared	☐ YES	☐ NO	☒ N/A
• Cost of BC individual released	☐ YES	☒ NO	☐ N/A

For data variables selected as YES, provide a description:

- *Galerucella pusilla* will be the species that will be established and sustained.
- *Galerucella pusilla* will be established as an insectary and transferred to other areas of Kansas.
- The insectaries will be established at Troy City Lake in Doniphan County and Mound City Lake in Linn County, Kansas.
- Troy City Lake in Doniphan County and Mound City Lake in Linn County, Kansas are the sites where Purple Loosestrife is known to exist and where *Galerucella pusilla* will be released for biocontrol.
- Troy City Lake in Doniphan County and Mound City Lake in Linn County, Kansas are the locations of pre-release site evaluations or surveys.
- Troy City Lake in Doniphan County and Mound City Lake in Linn County, Kansas will be the sites monitored.
- Troy City Lake in Doniphan County and Mound City Lake in Linn County, Kansas will be the sites with targeted pests participating in biocontrol.
- *Galerucella pusilla* will be the agent colony established as an insectary at Troy City Lake in Doniphan County and Mound City Lake in Linn County, Kansas.
- After release in the May or June, *Galerucella pusilla* will be monitored for in the field.
- The total number of *Galerucella pusilla* released will be approximately 4,000.

E. All survey data from federal cooperative agreements involving pest surveys, will be entered into an APHIS, PPQ approved database. The State Plant Health Director, or his/her designee, is responsible for assuring data quality.

1. If using NAPIS database.

a. First record for the State and/or County will be entered within 48 hours of confirmation of identification by a qualified identifier.

- All survey data from cooperative agreements involving biological control will be entered by the State Survey Coordinator or KDA staff into the IPHIS, if available, if not then NAPIS database using approved protocol.

b. All other required records, both positive and negative survey data, must be entered within two weeks of confirmation.

- Complete, accurate, and timely biological control data from cooperative agreements involving pest surveys will be entered by the State Survey Coordinator or KDA staff into the IPHIS, if available, if not then NAPIS database using approved protocol.
- Survey data will be collected with GPS technology for internal pathway analyses. Survey maps will be developed from approved GIS mapping software.

VIII. Reporting instructions:

A. Submit all reports to the APHIS Authorized Department Officer's Designated Representative (ADODR). Reports include:

1. Narrative accomplishment reports in the frequency and time frame specified in the Notice of Award, Article 4.
2. Financial Status Reports, SF-269, in the frequency and time frame specified in the Notice of Award, Article 4.
3. Standard Reporting Form for Biological Control Cooperative Agreements

SIGNATURES

_____ _____

ROAR Date ADODR Date

Detailed Financial Plan

PROJECT: Purple Loosestrife (*Lythrum salicaria*) Biological Control using *Galerucella pusilla*
COOPERATOR NAME: Kansas Department of Agriculture
AGREEMENT NUMBER: 12-8420-1227-CA
TIME PERIOD: January 1, 2012-December 31, 2012

Financial Plan must match the SF-424A, Section B, Budget Categories

ITEM	APHIS FUNDS	COOPERATOR FUNDS (Show even if zero)	TOTAL
PERSONNEL:			
KDA staff 81.5 hours @$25/hr	$2,038	$0	$2,038
Subtotal	**$2,038**	**$0**	**$2,038**
FRINGE BENEFITS:			
22% of salary for KDA staff	$448	$0	$448
Subtotal	**$448**	**$0**	**$448**
TRAVEL:			
Vehicle rental for 9 days @ $56/day	$504	0	$504
for KDA staff (shortage of vehicles)**			
Subtotal	**$504**	**0**	**$504**
EQUIPMENT:			
Subtotal	**0**	**0**	**0**
SUPPLIES:			
Biological Control Agent (*Galerucella pusilla*) + Shipping costs	$0	0	$0
Printing	$300		$300
Office supplies	$53	0	$53
Fuel 1,500 miles/15mpg x $3.75 per gallon for rental vehicle**	$482	0	$482
Subtotal	**$835**	**0**	**$835**
CONTRACTUAL:			
Subtotal	**0**	**0**	**0**
OTHER:			
Subtotal	**0**	**0**	**0**
TOTAL DIRECT COSTS	**$3,825**	**$0**	**$3,825**
INDIRECT COSTS (21.8% on Total	**$542**	**$0**	**$542**

Direct Cost of salary and fringe benefits)*			
TOTAL	**$4,367**	**$0**	**$4,367**
Cost Share Information	100%	0%	

*Note indirect cost rate will depend on each States Negotiated Cost Rate

** There is a shortage of state vehicles. We give the option of renting a vehicle or using personally owned vehicles. If renting we pay for the fuel and if a personal vehicle is used we pay mileage.